



SLOVENSKI STANDARD SIST EN 577:1998

01-april-1998

Aluminij in aluminijeve zlitine - Staljeni aluminij - Specifikacije

Aluminium and aluminium alloys - Liquid metal - Specifications

Aluminium und Aluminiumlegierungen - Flüssigmetall - Spezifikation

Aluminium et alliages d'aluminium - Métal liquide - Spécifications

Ta slovenski standard je istoveten z: EN 577:1995

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English version

**Aluminium and aluminium alloys - Liquid metal -
Specifications**

Aluminium et alliages d'aluminium - Métal liquide - Spécifications
Aluminium und Aluminiumlegierungen - Flüssigmetall - Spezifikation

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This European Standard was approved by CEN on 1995-06-03. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 132 "Aluminium and aluminium alloys" of which the secretariat is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1996, and conflicting national standards shall be withdrawn at the latest by January 1996.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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1 Scope

This European Standard specifies the requirements for the delivery in liquid metal of unalloyed aluminium or aluminium alloys.

2 Normative references

This European Standard incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 576	Aluminium and aluminium alloys - Unalloyed aluminium ingots for remelting - Specifications
prEN 1676	Aluminium and aluminium alloys - Alloyed aluminium ingots for remelting - Specifications
prEN 1780-1	Aluminium and aluminium alloys - Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings - Part 1 : Numerical designation system
prEN 1780-2	Aluminium and aluminium alloys - Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings - Part 2 : Chemical symbol based designation system
prEN 1780-3	Aluminium and aluminium alloys - Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings - Part 3 : Writing rules for chemical composition
EN ISO 9000-1	Quality management and quality assurance standards - Part 1 : Guidelines for selection and use (ISO 9000-1:1994)

3 Definitions

For the purposes of this standard, the following definitions apply :

3.1 aluminium : Metal with a minimum content of 99,0 % by mass of aluminium, provided that the content by mass of any other element does not exceed the following limits:

- iron + silicon contents not greater than 1,0 % ;
- other element contents not greater than 0,10 % each, with the exception of copper which is permitted to a content of up to 0,20 % provided that neither the chromium nor the manganese content exceeds 0,05 %.

NOTE: Aluminium in the liquid state or in the form of ingots for remelting is often called "unalloyed aluminium".

3.2 alloy : Metallic substance consisting of a mixture of the basic metallic element (the element predominating by mass) and other elements such as alloying elements and impurities.

3.3 alloying element : Metallic or non-metallic element intentionally added to, or naturally contained by, a basic metal and the amount of which is controlled within specific upper and lower limits for the purpose of giving that metal certain special properties.

3.4 impurity : Metallic or non-metallic element present but which is not intentionally added to a metal and for which no lower limit is specified.

4 Orders or tenders

The order or tender shall define the product required and shall contain the following information :

- a) designation of the unalloyed aluminium or aluminium alloy, according to the relevant European Standard (or the customer code after agreement between supplier and purchaser);
- b) form of the product (liquid metal);
- c) quantity :
 - mass (in metric tonnes);
 - quantity tolerances if required;
- d) any requirements for certificates of conformity, test and/or analysis reports or inspection certificates;
- e) any additional requirements agreed between supplier and purchaser.

5 Requirements

5.1 Production and manufacturing processes

Unless otherwise specified in the order the production and manufacturing processes shall be left to the discretion of the producer.

Unless it is explicitly stated in the order, no obligation shall be placed on the producer to use the same processes for subsequent and similar orders.

5.2 Quality control

The supplier shall be responsible for the performance of all inspection and tests required by the relevant European Standard and/or the particular specification, on arrival (for example, temperature of the metal).

5.3 Chemical composition

The supplier shall supply grades with chemical composition in accordance with the relevant European Standard (EN 576 or prEN 1676). If the purchaser requires content limits for elements not specified in the standard, these limits shall be stated on the order, after agreement between supplier and purchaser.

5.4 Transport ladles

The design of liquid metal transport ladles is left to the supplier's discretion as to their shape, capacity and brickwork. Each ladle shall be numbered.

The ladles shall be designed so as to prevent metal leaking, even in the case of major incidents, e.g. lifting beam failure, transport accident.

They shall comply with any existing regulations of the country (countries) concerned.

They shall include a fastening device to secure the ladle to the truck or trailer platform.

The ladle output and its safety device, shall be suited to the purchaser's discharge method, e.g. bottom pouring discharge with or without ladle handling, tip discharge (crane or tipper), or pressure discharge.

The maximum shell temperature attained shall not cause a significant reduction in the mechanical properties of the ladle.

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5.5 Means of transportation

Details of transportation such as:

- suitability of transport vehicle under general traffic conditions;
- the position of the centre of gravity being as low as necessary for safe transportation;
- the vehicle being fitted with suitable fire extinguishers;
- the training of the driver

shall conform with the regulations and practices in force in the countries of origin, transit and destination.

The procedures for acceptance, inspection and discharge shall be defined between supplier and purchaser.

5.6 Freedom from defects

The liquid metal shall be reasonably free from dross, inclusions or any other foreign bodies, which may affect metal quality.

To this end, the supplier shall implement filling and discharge systems which are designed so as to prevent a degradation of the metal quality. He shall also establish a schedule for ladle cleaning, the frequency of which shall be suited to the above-mentioned requirement.

6 Product inspection and testing methods

6.1 Analysis of chemical composition

Sampling procedures and analytical tests shall be carried out in accordance with quality assurance procedures (see EN ISO 9000-1). The results shall be traceable to national or international standard reference materials. The capability of the analytical procedures shall be verified.

The melt shall be clearly identified with a traceable heat number. The shape of the samples and the sampling conditions for chemical analysis shall be so designed that they are representative of the melt being cast. Each sample shall be taken after the last metallurgical treatment of the metal before departure.

Each analytical sample shall be suitably machined and, when analysed by emission spectrometry, shall be sparked at least twice. The analysis of the sample is the arithmetic mean of the sparks.

Each sample shall meet the specified composition limits and the analysis of the melt is the arithmetic mean of all the samples taken from this melt.

The producer shall determine and periodically check the analytical accuracy of each element analysed. He shall be able to demonstrate the validity of the whole test procedure, including sampling, sample preparation and measurement.

The analytical methods are at the discretion of the supplier who shall use methods accepted at the European or International levels.

6.2 Chemical composition

If not otherwise specified in the order, the composition shall comply with the same standard limits as described in the European Standards for unalloyed aluminium or alloyed aluminium ingots (see EN 576 and prEN 1676). The writing rules for designations and chemical composition, as given in prEN 1780-1, prEN 1780-2 and prEN 1780-2 shall be applied.

7 Inspection documents

By agreement between supplier and purchaser or when specified on the order, the consignment shall be accompanied by a certificate listing the results of the analysis of the chemical elements and any other requirement which may have been requested in advance.